Transport Canada Transports Canada

TP 1624

Marine Casualty Investigations

Enquêtes sur les accidents maritimes

Investigation Report to the Minister pursuant to sections 542 or 545 of the Canada Shipping Act

Rapport d'investigation au Ministre conformément aux articles 542 ou 545 de la Loi sur la marine marchande du Canada

CA1
DT. 70
86
R461

Canada

.CA1
TD 70
86
R461

Ce rapport est aussi disponible en français

Library and Information Centre / Centre de Documentation
RECEIVED - REÇU
OCT 24 1990
Transport Canada / Transports

REPORT OF INVESTIGATION INTO THE CIRCUMSTANCES SURROUNDING THE GROUNDING OF THE CANADIAN VESSEL "SAGUENAY" IN LAKE SAINT-FRANCOIS ON APRIL 25, 1986.

REPORT No. 461

These sections of the Investigation Report prepared pursuant to Section 542, or of the Preliminary Inquiry Report prepared pursuant to Section 545, of the Canada Shipping Act, are released for accident prevention purposes only and are confined to cause-related circumstances.

This report and its contents may be deficient and misleading if used in any other process and are not to be used or admitted in evidence in any legal proceedings, either civil or criminal, arising out of the casualty described in the report. The statements, opinions and findings in the report are those of the Marine Casualty Investigations Division only and do not constitute admissions made by or on behalf of Her Majesty the Queen in right of Canada.

Ces sections du rapport d'investigation ou du rapport préliminaire sont rédigées en vertu des articles 542 et 545 respectifs de la Loi sur la marine marchande du Canada et ne sont publiées qu'à des fins de prévention des accidents seulement et ne portent que sur les circonstances entourant le cas à l'étude.

Ce rapport et son contenu peuvent être insuffisants et trompeurs s'ils sont utilisés à d'autres fins et ne peuvent être utilisés ou acceptés comme preuve dans quelque procédure que ce soit, au civil ou au criminel, même si ces procédures découlent de l'accident décrit dans ledit rapport. Les déclarations, les opinions et les constatations de ce rapport appartiennent uniquement à la section des Enquêtes sur les accidents maritimes et ne constituent pas une acceptation de la part ou au nom de Sa Majesté du chef du Canada.

392775

REPORT OF INVESTIGATION INTO THE CIRCUMSTANCES SURROUNDING THE GROUNDING OF THE CANADIAN VESSEL "SAGUENAY" IN LAKE SAINT-FRANCOIS ON APRIL 25, 1986.

Particulars of Vessel

Name	"SAGUENAY"
Official Number	322994
Port of Registry	Toronto
Call Sign	VGWX
Gross Tonnage	20,148
Net Tonnage	14,947
Length (registered)	217.14 m
Breadth	22.92 m
Depth (moulded)	12.56 m
Draught (at time of incident)	F: 7.57 m A: 7.75 m
Type	Great Lakes self-unloading bulk carrier
Built	in 1964, Lauzon, Qc and re-built in 1972
Propulsion	One Fairbanks diesel engine of 9,400 b.h.p. driving a single shaft controllable pitch propeller.
Bow Thruster	One
Cargo	Coal
Classification	Lloyd's Register of Shipping
Owner	Voyageur Colonial Ltd. Ottawa, Ont.

Navigating Equipment

Radar 1	Sperry MK-127 E. Range of ¼ to 120 M

Radar 2	Sperry MK-127 E. Range of ¼ to 120 M
Direction Finder	Marconi Lodestar
Echo Sounder	Kelvin and Hughes
Decca	Decca Navigator MK-21
Loran C	Internav LC 300
Radio 1	SSB CAI SSB-125
Radio 2	Collins MR-201
Radio 3	Sailor RT 144 C
Gyro Compass	Sperry MK-37
Gyro Repeater	One (1) near the steering station One (1) at the fore part of the bridge
Course Recorder	Sperry

Note: All times in this report are expressed in Eastern Standard Time (UTC minus 5 hours).

Background

After being blinded by the rays of the rising sun on the morning of April 25, 1986, the bridge personnel of the down-bound vessel "SAGUENAY" reported being aground south-east of buoy D9 in Lake Saint-Francois.

At 1044 on that same day, the "SAGUENAY" was refloated without assistance, then directed towards the Saint-Zotique anchorage to await an inspection to be carried out by a St. Lawrence Seaway inspector.

There were no injuries, pollution or apparent damage to the hull as a result of this accident. At about 1300 on that same day, the vessel "SAGUENAY" was granted permission to continue her journey to Sept-Iles with a load of coal.

Narrative

The Canadian self-unloading bulk carrier "SAGUENAY" left the port of Conneaut on Lake Erie with 23,764 tonnes of coal which were to be trans-shipped aboard an awaiting foreign vessel in Sept-Iles.

The "SAGUENAY" was off Bartlett Point at about 1430 on April 24, 1986, when the chief officer took over the piloting. At about midnight, the master replaced the chief officer when the vessel reached Richards Point which is about 5 nautical miles from Eisenhower lock. It was understood that on leaving Snell lock, the chief officer would be called once again to pilot the vessel down-river to the Valleyfield bridge in the Beauharnois Canal. The chief officer was relieved so that he could have a few hours of rest.

On April 25, 1986, the "SAGUENAY" passed through Eisenhower lock and then cleared Snell lock at 0255. The chief officer was once again called to the bridge to conduct the piloting across Lake Saint-Francois and the master retired from the bridge.

Because the chief officer had taken over the pilotage, the second officer and the third officer were assigned watch duty from 12-6 and 6-12 respectively.

At 0425, buoy D49 was passed and logged. At that time, the chief officer had the conduct of the vessel, and the second officer and the wheelsman were on watch.

The starboard radar was on relative display and on the 3-mile range. The gyro error was estimated to be 1° high.

The pitch on the propeller was set at 'full ahead' and the vessel's speed was her normal service speed of about 13 knots.

The sky was clear and the visibility was good. The sea was glassy and the winds were calm. The predicted time for sunrise was 0456 at an approximate bearing of 077°. The weather was so pleasant that it was the topic of conversation between the navigating personnel on the bridge.

At about 0500, the "SAGUENAY" reached Calling In Point No. 6 and 'Seaway Beauharnois' was advised.

Meanwhile the wheelsman was being blinded by the rays of the rising sun and it made the reading of the gyro compass repeater difficult. He explained his problem to the chief

officer and asked permission to leave the steering station so that he could fetch his sun-glasses from his cabin. The chief officer, who was sitting in front of the centre window in the wheel-house, rose and relieved the wheelsman at the steering station. Two or three minutes later, the wheelsman returned and took over the wheel from the chief officer.

Subsequently, an alteration of course to starboard was undertaken in order to line up the Pointe Beaudette range by the stern on a course of 062°(T). While the vessel was steered on this course, the glare of the bright rising sun concealed the port hand buoy D9 and the anchorage buoy DI. The latter is a yellow coloured buoy which indicates the southern limit of the Saint-Zotique anchorage.

The chief officer was sitting in front of the centre window in the bridge and just in front of the steering position while the second officer stood to the right of the wheelsman and in front of the radar on the starboard side. The wheelsman was steering 062°(G). At that time, there was no other traffic in the area.

Suddenly, the chief officer caught sight of a buoy, which, in the glare of the sun, appeared to be greenish in colour. When the buoy came to about 45° on the starboard side, he believed that it was buoy D9 and ordered the wheelsman to steer 'to the right' and then 'to steady'. The wheelsman repeated the orders given to him and steered 072°(T). Then the chief officer rose and headed towards the port side to check the Pointe au Foin range on the stern. He noticed that the transit towers were open to the north. He immediately ordered the wheelsman to steer 'to the left' and at the same time caught sight of buoy D9 which was 10° on the port side and moving out of the blinding rays of the sun. He rushed to the main engine control and reversed the propeller pitch to 'full astern'.

The personnel on the bridge could feel the vessel scraping along the bottom. She heeled over slightly to starboard and then righted herself before coming to a complete stop while the main engine continued to run in the 'full astern' mode. The time was 0530 and the "SAGUENAY" had run aground about 120 m to the south-east of buoy D9.

Shocked by the events of the grounding, it took the chief officer two or three minutes before calling the master. The moment the master learned that the vessel was aground, he rushed to the bridge and on his arrival realized that the main engine was still running in the 'full astern' mode.

The grounding of the "SAGUENAY" at buoy D9 was not

reported to the Seaway authorities until 0607. The master ordered all tanks to be sounded, as well as the waters around the vessel. As a result of these soundings the compartments were found to be intact and no apparent damage to the hull was detected.

The soundings around the vessel indicated that her stern was in deep water and that only the forward section of the vessel was aground. Before commencing refloating manoeuvres, No. 6 ballast tanks were filled.

Attempts at refloating the vessel were carried out without previously advising 'Seaway Beauharnois'. The master put the main engine on 'full astern' and at the same time the self-unloading boom was swung from side to side. According to the ship's log book, at about 1100 the vessel was refloated and at 1120, she was instructed by "Seaway Beauharnois' to proceed to the Saint-Zotique anchorage to be inspected by a St. Lawrence Seaway inspector.

The inspection confirmed that the hull was intact and at 1300, the "SAGUENAY" was given permission to proceed down river towards Sept-Iles.

Analysis

1. Weather conditions

On the morning of April 25, the weather conditions on Lake Saint-Francois were excellent: the winds were calm and the lake was smooth; there were no clouds and the visibility was good except in the direction of the rising sun.

2. Main engine and navigating appliances

There was no malfunction in the steering gear or the main engine prior to the accident. All navigating appliances on board the vessel were operating in a satisfactory manner and the two gyro repeaters were synchronized with the gyro compass. At the time of the grounding, the gyro error was estimated to be 1° high. The starboard radar was operating on the 3-mile range in the relative display mode; the port radar was not on. However, there was no attempt made to utilize the operating radar as a means of double checking the vessel's progress in the channel before the grounding.

3. **Aids to navigation in the area of grounding**

In the area where the grounding took place, all the summer buoys were in place and the Pointe Beaudette range as well as the Pointe au Foin range astern of the vessel could be clearly seen.

4. **Current on Lake Saint-Francois**

The Great Lakes Sailing Directions, volume 1, ninth edition, 1982, describes the current on Lake Saint-Francois as:

> The current sets diagonally across the seaway channel on the 209° course, but the strength of the current is slight. In most of Lac Saint-Francois the current does not exceed a rate of 0.5 knot.

In the eastern part of the lake, the current increases in speed and the Sailing Directions describe the current in the following manner:

> The current in the channel immediately upstream of Canal de Beauharnois sets fair with the channel at a rate of 2 knots.

5. **Speed of vessel**

From Calling In Point No. 6 to buoy D9, the "SAGUENAY" covered a distance of 6.5 nautical miles in 30 minutes averaging a speed of 13 knots over the ground.

6. **Determining the position**

The vessel's progress was not plotted on the chart in use at the time of crossing Lake Saint-Francois except for the position of the grounding at 0530 on April 25, 1986.

Although the chief officer was convinced that the buoy in the sun's rays was buoy D9, the position before and after the course change to starboard was not plotted nor was the range of Pointe au Foin astern of the vessel checked.

7. **Navigation records**

From Calling In Point No. 6 to the position of grounding, the "SAGUENAY" covered a distance of 6.5 nautical

miles at an average speed of 13 knots over the ground. At that speed the course changes at buoys D21 and D17 would have occurred at 0511 and 0519 respectively.

Also when the yellow anchorage buoy DI was mistaken for the green buoy D9 and the course altered to starboard, appropriate measures were not taken to properly identify the buoy. This could have been done by observing the buoy with binoculars or when it came abeam.

In this case, and as per custom in many Great Lakes vessels operating in confined waters, neither the course changes nor the identification of buoys when coming abeam were recorded in the ship's log book.

The Recommended Code of Nautical Procedures and Practices, third edition 1985, published by the Ship Safety Branch clearly describes the duties and responsibilities of the personnel on duty pertaining to navigation and states the following:

> 6.(b) **Navigation**
> During the watch the course steered, position and speed shall be checked at sufficiently frequent intervals, using any available navigational aids necessary, to ensure that the ship follows the planned course.
>
> 8.(c) **Navigational duties and responsibilities**
> A proper record shall be kept of the movements and activities during the watch relating to the navigation of the ship.
>
> 21. **Navigation in coastal waters**
> The officer of the watch should positively identify all relevant navigation marks.

This casualty shows that it is vital for those having the conduct of a vessel to comply with these recommendations and to be absolutely certain of the vessel's position at all times.

8. Error in navigation

The only explanation given concerning this navigational error was that the navigating personnel were blinded by the glare of the rising sun's rays.

Nevertheless, the Pointe au Foin range which was astern of the vessel, was clearly visible and was not observed before and during the course change. This range was observed a few moments after the course change but it was too late to prevent the grounding.

9. **Look-out**

At the time of the grounding the chief officer, the second officer and the wheelsman were on the bridge. There is no doubt that the navigating personnel did not see the green buoy, D9, in time because they were blinded by the sun's rays.

Look-out duties as prescribed in rule 5 of the Collision Regulations are elaborated in the Recommended Code of Nautical Procedures and Practices. (See Annex A)

10. **Fatigue factor**

The master of the vessel "SAGUENAY" has sailed mainly in the upper part of the Great Lakes and seldom in the St. Lawrence Seaway whereas the chief officer was acquainted with the navigation in the St. Lawrence Seaway. Because of his experience, the master had asked the chief officer to take over the piloting from Bartlett Point onwards.

At the time of the grounding, the chief officer was feeling fatigued, having completed 12 hours of piloting over a period of 15 hours of travel from Bartlett Point.

11. **Seaway Regulations**

Paragraph 1 of Section 81 of the Seaway Regulations stipulates that:

> Where a vessel on the Seaway is involved in an accident, the master of the vessel shall report the accident to the nearest Seaway station immediately...

At 0607 the vessel traffic controller at 'Seaway Beauharnois' received a call from the "SAGUENAY" on channel 14 reporting that she was aground at buoy D9 since 0530. The ship's log book indicates the time of grounding but not the time at which 'Seaway Beauharnois' was called.

According to the ship's log book refloating operations were commenced at 1100, however, these operations were

commenced without the prior authorization of the vessel traffic controller at 'Seaway Beauharnois'. According to the vessel traffic controller, the "SAGUENAY" reported being refloated and underway at 1044 and not at 1100 as the ship's log book indicates. On learning that the "SAGUENAY" was refloated, the Seaway authorities ordered her to proceed to the Saint-Zotique anchorage.

12. **Records of groundings**

The area of the grounding is not considered to be difficult to navigate. According to Transport Canada's records since 1975 there have been no other groundings in the immediate vicinity of buoy D9 on Lake Saint-Francois.

13. **Qualifications and experience of personnel**

The master holds a Canadian Master Inland Waters certificate of competency issued in 1981. He has been employed by this Company since 1973 and full time as master since 1981. He has sailed mainly in the upper part of the Great Lakes and has little experience in the St. Lawrence Seaway.

The chief officer holds a Canadian Master Inland Waters certificate of competency issued in 1982. He began sailing deep sea in 1959 and on the Great Lakes in 1976 in the capacity of second and third officer, then as a relief-chief officer in 1978 and finally full-time in 1981. He attended a simulator course in navigation in New York in 1985 and has been working for his present employer since 1976.

The second officer holds a Canadian Second Mate Inland Waters certificate of competency issued in 1974 and a Canadian Watchkeeping Mate certificate of competency issued in 1983. He started sailing on the Great Lakes in 1964 and has been in charge of a bridge watch since 1974. He commenced working for his present employer in 1979.

The wheelsman has served in the same capacity for the past seven (7) years. He has been sailing on the "SAGUENAY" for the past six (6) years.

Findings

While crossing Lake Saint-Francois on April 25, 1986, the down bound vessel "SAGUENAY" ran aground south of the

channel near buoy D9.

The grounding was caused by a navigational error due to the vessel's position not being determined regularly and no measures being taken to ensure that the vessel followed a safe route in conditions of difficult visibility in the forward sector.

It would appear that the following factors contributed to the grounding:

- the visibility ahead was difficult due to the brightness of the rising sun's rays;
- the Pointe au Foin range was not observed before and during the course change to starboard;
- the anchorage buoy D1 was wrongly identified as buoy D9 before the course alteration to starboard;
- failing to make use of the radar in a situation of difficult visibility.
- the probable fatigue of the officer who had the conduct of the vessel.

Other findings

The vessel traffic controller at 'Seaway Beauharnois' was not advised until 0607 that the "SAGUENAY" had gone aground.

Because of this delay, the grounding of the "SAGUENAY" was not made known to an up-bound vessel in the Beauharnois Canal.

The manoueuvres and the refloating of the "SAGUENAY" were carried out without the authorization of the vessel traffic controller at 'Seaway Beauharnois'.

OTTAWA, ONTARIO
FEBRUARY 1987.

ANNEX A

REGULATIONS FOR THE PREVENTION OF COLLISIONS

Short Title

1. These Regulations may be cited as the *Collision Regulations*.

RULE 5

Look-out

Every vessel shall at all times maintain a proper look-out by sight and hearing as well as by all available means appropriate in the prevailing circumstances and conditions so as to make a full appraisal of the situation and of the risk of collision.

RECOMMENDED CODE OF NAUTICAL PROCEDURES AND PRACTICES TO BE FOLLOWED BY PERSONS ON BOARD SHIPS IN ORDER TO ENSURE SAFETY AND POLLUTION PREVENTION

PART I

BASIC PRINCIPLES TO BE OBSERVED IN KEEPING A NAVIGATIONAL WATCH

9. **Look-out**

In addition to maintaining a proper look-out for the purpose of fully appraising the situation and the risk of collision, stranding and other dangers to navigation, the duties of the look-out shall include the detection of ships or aircraft in distress, shipwrecked persons, wrecks and debris. In maintaining a look-out the following shall be observed:

(a) the look-out must be able to give full attention to the keeping of a proper look-out and no other duties shall be undertaken or assigned which could interfere with that task;

APPENDICE A

RÈGLEMENT POUR PRÉVENIR LES ABORDAGES

Titre abrégé

1. Le présent règlement peut être cité sous le titre: *Règlement sur les abordages*.

RÈGLE 5

Veille

Tout navire doit en permanence assurer une veille visuelle et auditive appropriée, en utilisant également tous les moyens disponibles qui sont adaptés aux circonstances et conditions existantes, de manière à permettre une pleine appréciation de la situation et du risque d'abordage.

CODE RECOMMANDÉ DES MÉTHODES ET LES PRATIQUES NAUTIQUES À SUIVRE PAR LES PERSONNES À BORD DES NAVIRES AUX FINS DE LA SÉCURITÉ ET DE LA PRÉVENTION DE LA POLLUTION

PARTIE I

PRINCIPES FONDAMENTAUX À OBSERVER LORS DU QUART À LA PASSERELLE

9. **Veille visuelle**

Les fonctions de l'homme de veille doivent consister non seulement à assurer une veille visuelle appropriée pour évaluer pleinement la situation et les risques d'abordage ou d'échouement ainsi que les autres dangers pour la navigation mais également à repérer les navires ou aéronefs en détresse, les naufragés, les épaves et les débris. Lorsque l'on assure une veille visuelle, il convient d'observer les dispositions suivantes:

a) L'homme de veille doit pouvoir consacrer toute son attention à ses fonctions et ne doit se voir confier ni entreprendre aucune fonction qui risquerait de gêner le bon exercice de cette veille.

(b) the duties of the look-out and helmsman are separate and the helmsman shall not be considered to be the look-out while steering, except in small ships where an unobstructed all-round view is provided at the steering position and there is no impairment of night vision or other impediment to the keeping of a proper look-out. The officer in charge of the watch may be the sole look-out in daylight provided that on each such occasion:

(i) the situation has been carefully assessed and it has been established without doubt that it is safe to do so;

(ii) full account has been taken of all relevant factors including, but not limited to:
- state of weather
- visibility
- traffic density
- proximity of danger to navigation the attention necessary when navigating in or near traffic separation schemes;

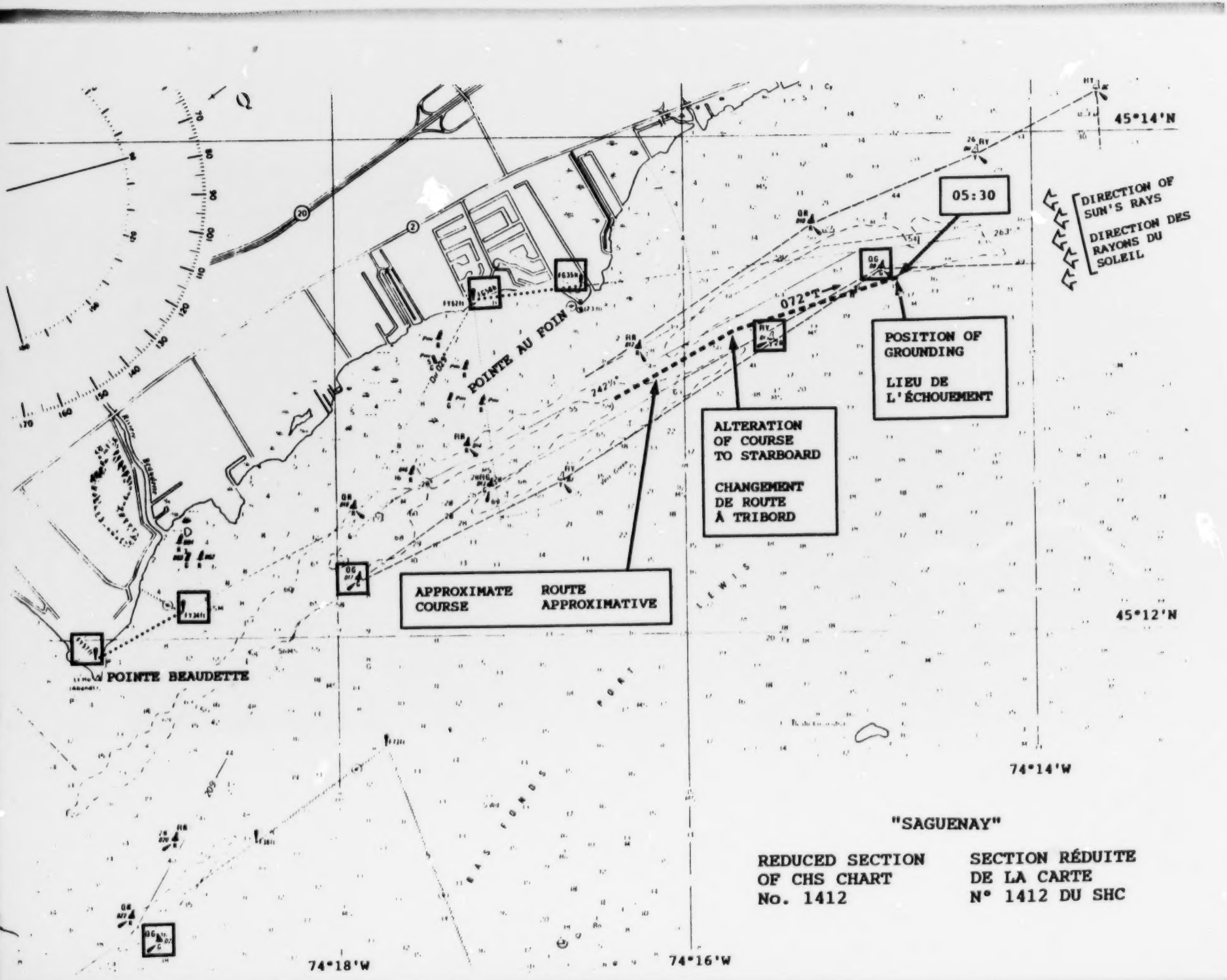
(iii) assistance is immediately available to be summoned to the bridge when any change in the situation so requires.

b) Les tâches assignées à l'homme de veille et au timonier sont distinctes et l'on ne doit pas considérer le timonier comme préposé à la veille lorsqu'il est à la barre, sauf sur les navires de faible tonnage où l'on a une vue dégagée sur tout l'horizon depuis la barre et où rien ne gêne la vision nocturne ni n'entrave de quelque autre manière la veille visuelle. De jour, l'officier chargé du quart peut assurer seul la veille visuelle à condition que dans chaque cas:

i) la situation ait été attentivement évaluée et qu'il ait été établi sans doute possible que l'officier chargé du quart peut assurer seul la veille en toute sécurité;

ii) il ait été dûment tenu compte de tous les facteurs pertinents et notamment, sans que cette énumération soit limitative:
- du temps
- de la visibilité
- de la densité du trafic
- de la proximité de dangers pour la navigation
- de l'attention nécessaire pour naviguer à l'intérieur ou à proximité de dispositifs de séparation du trafic;

iii) la passerelle puisse bénéficier d'une aide immédiate si un changement de situation l'exige.



"SAGUENAY"

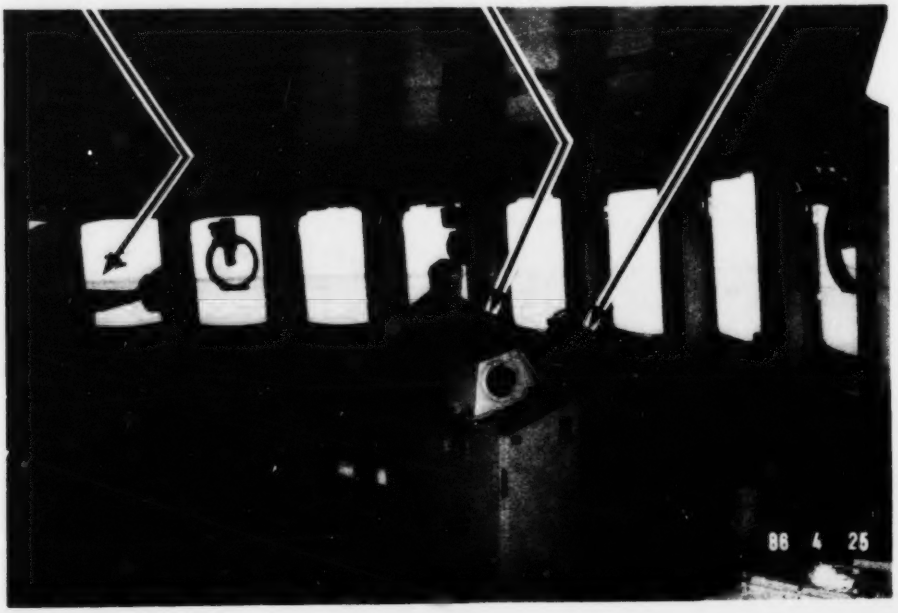
REDUCED SECTION OF CHS CHART No. 1412

SECTION RÉDUITE DE LA CARTE N° 1412 DU SHC

The "SAGUENAY" downbound in Beauharnois lock on April 25, 1986.

Navire "SAGUENAY" en descendant à l'écluse de Beauharnois le 25 avril 1986.

Wheelsman	Chief Officer	Second Officer
Timonier	Second capitaine	Officier de quart



Position of navigating personnel at the time of the grounding.

Position du personnel navigant au moment de l'échouement.